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S. R. WINCHELL, [EDITORS.] JEREMIAH MAHONY.

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THE WEEKLY.

We continue in this number Prof. Howland's translation of the Æneid. It is our intention to devote one page of the WEEKLY to this translation until at least the first book is completed. We are sure it will be appreciated by our readers.

We invite particular attention to the letter published in another part of this paper from Mrs. Mary L. Carpenter, superintendent of the public schools of Winnebago county, Illinois. Her success in the particular work there described has been very marked. She is now preparing a premium list for the educational exhibit next fall. The Agricultural Board has appropriated $75 for this purpose, while last year the appropriation was only $50. The supervisors of that county are also opening their eyes to the efficiency and value of a woman's services in a public office, and have set aside $75 for the spring institute expenses, for which they have been in the habit of giving $50.

IMPENDING DISCOVERIES.

A LATE improvement in telegraphy, due to the genius of Mr. Stephen D. Field, of San Francisco, and likely to be in general use all over the world, within a few months, dispenses with the troublesome and capricious batteries, and substitutes neat, clean, and comparatively light, compact, and easily managed dynamo machines, at one-sixth the expense. Other inventions make one wire as effective as four were formerly.

The *Scientific American* declares in exalted and enthusiastic terms that it no longer requires a prophetic vision to see along the vista of coming improvements due to the agency of electricity; the application of which to human needs has only begun, and the full import of which is beyond conception. It will bestow vastly more than those great gifts of the telegraph, the telephone, the guardianship of property, and the almost perfected electric light, conveyor of power, and—let us hope—of clean and perfectly controllable modes of heating, for all sorts and parts of buildings, and all uses.

We now have daily the news of yesterday from all the nations of the earth, and of all important events within our own borders. To lay all this before the eyes of the hosts of readers every morning requires an electric rapidity of movement through all the processes. There is no longer time for the transcription of reporters' short-hand notes. Reporters are engaged in corps. They work in relays. Each reads the notes of his ten minutes' turn to a loud-speaking telephone at the other terminus of which a compositor sets up the words in type without the trouble of deciphering copy. The indications are, says the *Scientific American*, that, by the use of telegraphy and stenography, reports of public meetings will soon be sent, almost instantly, throught long distances, and at a fraction of the present cost. The simple elementary shorthand that is used for dictating spelling exercises in some of our advanced primary schools, thus falls justly into line with the demands of our wonderful age. It is never too early to prepare for dealing with these real Genii which are doing greater actual wonders for us than the Arabian writer's imagination bestowed upon Aladdin.

IRISH NATIONAL SCHOOLS.

FORTY years ago a good reader was a distinguished character in the rural districts of Ireland. He was usually a young man trained to fluency in presenting the contents of the newspaper by the criticism of older men, whose early experience did not qualify them to read aloud with effective expression. The reading of the newspaper formed a sequel to the Sunday's devotions; the agitation of O'Connell gave interest to the performance and the attention and applause of a parish spurred the reader to an enthusiastic rendition of the paper's eloquent and bristling columns. One who could read was the exception, but it was only the half-witted or no-witted that were not able to appreciate the reading.

By 1830 the last of the statutes against Catholic, or free education in Ireland was wiped away, and the late Lord Derby, then Mr. Stanley, Irish Chief Secretary, proposed and establsshed the present system of national schools. A government board of commissioners was established to superintend primary education throughout Ireland. No new schools were established, but local managers were invited to attach their schools to the board, in return for which they received a grant in aid of teachers' salaries, and school supplies at a lower rate; but such schools were subject to visitation by government inspectors, who held the teachers to a strict conformity with the fundamental rules and regulations.

The system was not all that the Irish hoped for; it was not conducted in accordance with their religious views as were the schools of England and the British schools of Scotland; it was unsectarian, and non-Catholic. Yet, obeying the voice of Thomas Davis in his memorable injunction, "Educate and you will be free," the childrdn flocked in thousands to the national schools, in which a class of teachers and a grade of instruction were found far superior to any the peasantry had known before. The Protestant advocates of free schools desired to make them instruments of proselyting Catholic youth. The Catholics demanded a sys-

tem as denominational as that of the English and Scotch; Mr. Stanley took a middle course—to forbid proselyting but to give separate religious instruction. At a particular hour separate religious instruction was given, but during the remainder of the day nothing of a sectarian character was allowed.

Yet the system was poorly supported from the beginning. The Protestant landed proprietors were horrified at the thought of giving the Irish education without an attempt to raise them out of the spiritual bondage of Popery, and would grant nothing in the shape of local aid which was so generously bestowed in England and Scotland, and the Catholics were a little cold towards what was virtually a system of secular education, so repugnant to the doctrines and traditions of the Church. The result was that little was bestowed in support of the schools but what came from the government and the voluntary contributions of the middling farmers, who took pride in appearing above the needs of mere charity education for their children.

But the system grew in popularity and size. Though theoretically undenominational, it was during the first dozen years of its struggle into existence practically sectarian. In Ulster the Bible was read and in the Catholic provinces the catechism was freely taught. This made the clergy of the several creeds "warm to" their respective schools, and soon the landowners observed that education improved the conduct of the youth in their estate, and encouragement and support were vouchsafed, which came as oddly from that quarter as a graded school system for negroes would have been phenomenal as the handiwork of the slave-holders in ante-rebellion days.

There was a great deal of coquetting between the rival religions for the instruction of the youth, and it was not uncommon to find two national schools within a stone's throw of each other, differing only in the denominational bias of the teacher. Bidding for attendance of children ran high; but usually the Catholic institution was the more successful. To offset this the Protestant establishment threw in a breakfast, which seemed to take well at first; but it was noticed that immediately after the breakfast the little rascals deserted to the Catholic primary, To head off this defection, the plan was adopted of deferring the breakfast till after school hours, at three o'clock!

As a trick to offset this, the Catholic school would have before the regulation hour for secular study a regular oratory at the end of the room, which, upon the striking of the clock, would, as if by magic, shut up and be nothing but a teacher's rostrum! In these bickerings the Protestant clergy were more steadfast than their Catholic opponents; they protested vigorously against a school or system of schools in which the Bible was closed during certain hours of the day by the fundamental rules of the system, whereas the Catholic clergy accepted the national system as a choice of evils.

Finally a compromise was effected—"That no teacher need prevent a child from being present at religious instruction contrary to his registered creed, but that upon such occurrence the teacher should send a filled-up printed ticket notifying the parent of the fact."

This was a victory for the Protestants and brought in the Episcopalians and Presbyterians, but it gave a grievance to the Catholic clergy, which they have been airing ever since in a demand for capitation grants and separate schools, such as are demanded by the more active anti-public school agitators in the United States.

To say that under all these adverse circumstances the national school system of Ireland was a great success is expressing the truth feebly. An admirable Christian but non-sectarian series of school-books was prepared, that captivated old and young and gave an amount of information that would astonish some of our American rehashers of school-books.

Old and young went wild over the prospects of education; and before ten years the whole aspect of the country intellectually was changed. Rapidity of comprehension and execution, especially in arithmetical processes, is a characteristic of the graduates of these schools, and when the civil service rules were adopted, which opened the minor offices of government to scholastic competition, Johnny, Sandy, and Taffy opened their eyes in amazement at seeing seven-tenths of the prizes borne off by the youthful Patlanders fresh from the Irish national school. It is true that the Irish have a genius for office-holding; but this move gave that genius its full bent and the drum-beat of England which rolls around the world and echoes on either side of the equator is principally occupied in marking the duty-hours of young Irishmen in the British civil service, put there through proficiency gained in the national schools. There are many features peculiar to this system which may form the substance of a future article.

SIMPLE EXPERIMENTS ILLUSTRATING SOME POINTS IN REGARD TO CIRCULATION AND RESPIRATION.

I.

Prof. F. H. King, River Falls, Wis.

THE great aim of instruction in human physiology should be to plant such seed as shall ripen into a thorough understanding and intelligent, persistent application of hygienic laws.

Such seed can reach early, healthful maturity only in an ample knowledge of human anatomy enriched with vivid correlated conceptions of human physiology.

Since the best chosen language, supplemented by figures executed with the greatest fidelity must always fix slowly and inadequately at best, but partial and usually distorted notions of organic structures, I believe it is deeply to be regretted that none of our text books of physiology are sufficiently explicit in giving directions which shall enable the student to demonstrate for himself with some degree of satisfaction, the principal anatomical structures and physiological processes upon which hygienic laws rest; and there appears no sufficient reason for longer omitting from the text-books that which is so essential to accurate fundamental knowledge.

The necessary directions need not be lengthy and may be easily followed; they may find ample room in the places now occupied with verbiage and but slightly relevant matter.

There is an abundance of cheap, desirable material every where at hand, upon which the student may work if the subject is pursued in the spring or fall, as it should be; for, so closely is the human body allied to those of the common vertebrate animals about us, that cats, small dogs, squirrels, rabbits, rats, gophers, mice, young pigs and lambs which die in the spring from causes leaving their bodies perfectly fresh and sweet, frogs, snakes, and turtles are all excellent subjects, some of them serving better to illustrate one set of organs or physiological processes than others.

A sharp jack knife, with large and small blades; a pair of sharp-pointed scissors, found in almost any home; a pair of small forceps cut from a bit of dry hickory or maple; quills or stiff hollow straws for blowpipes; hog's bristles tipped with sealing wax by

touching one end to a bit of melted wax and quickly jerking it away, to thrust into ducts and small tubes whose course is to be traced; and some thread and twine for tying vessels, are the only absolutely indispensable appurtenances to the dissections in mind, and they are no mean make-shifts for better or more pretentious materials. A good injecting syringe may be purchased for a dollar, or a boy, with a little mechanical apparatus and a suggestion from his teacher, may make a serviceable "squirt gun" for himself. Thus equipped, the student, with a little ingenuity, some patience, and much persistence and determination, might, in a very short time, if the directions referred to were before him, find himself well on that road that leads above and beyond the clover-fields of quacks and humbugs.

Good casts and models are valuable aids to the study of physiology if righty used, but they can never take the place of the organs they represent, and should serve to draw into the class-room, rather than exclude from it, the models nature has so inimitably furnished.

It is the object of this article to indicate a few simple and truthful experiments illustrating some of the physiological processes of circulation and respiration. What of originality there may be in the methods, it shall be the privilege of the reader to judge. The hope entertained is that the thoughts may spur some student or some teacher to better work.

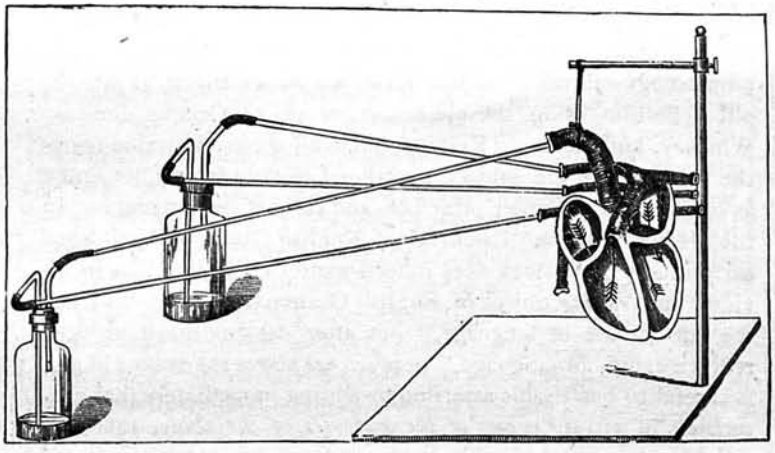

FIG. 1.

Fig. 1 represents a method of demonstrating before a class the actions of the heart in producing the pulmonic and systemic circulations. For this purpose the heart of a sheep, calf, or hog will be found most desirable. In obtaining the heart, care should be taken not to injure it in any way, and to sever the main trunks at points as far distant from the heart as practicable. Special care will need to be taken in order to obtain the pulmonary veins of sufficient length for ligation. After removing the fat and connective tissue from the arteries and veins, four quarter-inch glass tubes, 14 to 20 inches long, should be securely tied into them, as represented in the cut, and the remaining vessels ligated. Should connection with a branch of the pulmonary artery be impossible, the tube may be introduced into the main trunk, care being taken not to interfere with the semilunar valves. It may happen that a pulmonary vein will be severed close to the auricle; in this case, a strong pinch of the wall about the orifice may be taken and tied without materially interfering with its action. If the heart be that of a very young calf, the duct connecting the pulmonary artery and aorta may not be completely closed, in which case it should be tied without cutting.

Two 6 to 8 *oz.* bottles, representing the lungs and the system respectively, have sealed air-tight in their necks, by means of sealing wax, two bent glass tubes, one of them reaching nearly to the bottom of the bottle, as seen in the cut.

Water colored with analine or Brazil wood answers well for a fluid, but a little blood may be used instead of the dyes named with good effect. The fluid may be introduced with the aid of a small force pump or syringe attached to the tube representing one of the veins at its distal end whose connection with the bottle has been broken. If neither the pump nor syringe can be had, place the water in a large coffee-pot, watering-pot, or tea-kettle and connect the tube with the spout by means of a cork. When the vessel is raised until the tube takes a nearly vertical attitude there will be found a sufficient head to fill the apparatus. When the auricles are well distended, connect the tube again with its bottle, allowing none of the fluid to escape during the operation. If the class is permitted to witness the filling, it will be observed that the fluid first enters an auricle, then emerges from a ventricle to pass through a bottle and return to the other auricle, only to appear in the tube leading from the remaining ventricle and set toward the other bottle.

To manipulate the apparatus, after the connection has been made, so as to establish the circulation, grasp the ventricles with both hands, placing the thumbs side by side, parallel, pointing toward the auricles, and facing the side of the septum. By now alternately closing and opening the hands so as to bring the walls of the ventricles upon the septum, a vigorous current is at once established throughout the apparatus, and may be maintained indefinitely. It need hardly be added here that this experiment is, almost in detail, a truthful portrayal of one of life's most important processes. It is certainly very instructive.

The flow in the arteries, its intermittent character, and the pulse are distinctly observed and connected, as results, with the contractions of the ventricles. The elastic air is seen to yield under the sudden pressure while it stores up the otherwise wasted, bursting, and therefore dangerous energy of sudden flow through unyielding pipes, converting it into a steady motion setting toward the heart through the veins, thus imitating a provision nature adopted years ago in the elastic walls of the circulatory tubing for greater economy and safty.

The effectiveness of the semilunar valves in preventing regurgitations may be demonstrated by attaching the pump to the distant end of one of the artery tubes and endeavoring to force the fluid into the heart. It may also be shown that under high pressure there is a greater leakage through the pulmonary than through the aortic valves, thus demonstrating the "safty-valve function" of the former.

With the pump attached as before, it is only necessary to thrust the tube farther into the artery so that its end shall lie between the edges of the semilunar valves to demonstrate the functions of the mitral and tricuspid valves. A high pressure, too, will prove an insufficiency to exist in the tricuspid folds, showing that they also perform the "safty-valve function."

It is desirable at this juncture to permit the class to see these valves in action. With the connections just as they were in the last experiment, it is only necessary to cut away the wall of the auricle whose valves were last upon trial, when a stroke at the pump will bring them at once upon duty, in full view. Now, withdraw the tube until the semilunar valves are freed, and then cut away the ventricle until they are exposed. They will be found shoulder to shoulder effectually closing the passage.

The glass tubing necessary for these experiments may usually be obtained at any good drug-store and ought not to cost over

thirty cents. If the rubber tubing is not at hand, the connections with the bottles may be made with bits of arteries, with the ileum of a cat, or with strips of waxed cloth, such as nursery men use for grafting.

If the action of the valves simply is all that is to be demonstrated, a single tube is all that is necessary, and one of tin half an inch in diameter is as good as any; the method of procedure is that already described.

SCHOOL MISTRESSES AND LANGUAGE LESSONS.

ELLEN F. GOODWIN, Maine.

I AM sometimes tempted to think that, among a certain class of the writers for our educational journals there exists a kind of tacit agreement, in exposing the bad of the school-room work, to seek a *school mistress* for the *victim*, and in magnifying the *good* to seek a *schoolmaster* for the *crown*. The last number of the *Pennsylvania School Journal*, a very superior publication, in an article entitled, "What is Meant by Language Lessons?" from a School Supervisor of Nebraska, is a forcible illustration of the spirit to which I have alluded. The article is so censorious and at the same time so complete an exemplification in its composition of the very views which it so strenuously assails in the school mistresses that I am provoked to this response. The writer in his glib and loose manner runs on as though he supposed his rude disparagements of their qualifications would be received by his victims with grateful pride, though in his detractions never so unlimited and indiscriminate, sweeping into the cavern of ignorance and incompetency a whole institute—seventy-five school mistresses—by a single dash of his imperious pen—not one of the whole band, according to his account, being able to write scarcely a line of good English. I do not credit his representation. I have had some experience as a teacher among the western school mistresses, though a New Englander "native and to the manor born;" and the respect for this intelligence which I imbibed from all my observations, compels me to interpose a word in their defense.

It is very true that the average attainments and fitness for this work of the school mistresses of the county, in our public schools, is sadly low, but it is in my view by no means certain that the average fitness of the school masters is any better for the grade of work assigned to them than that of the school mistresses for the work in their charge. I think at all events the wretched English of the Supervisor's article is a conclusive evidence of his unfitness to comment at all upon the qualities of English comsition, and will try in this notice to furnish some reasons for this opinion. Nor do I think the article sufficiently clear and explicit in its conceptions to render it of much account in the consideration of the topic announced in the title of the article. It is in the diffuse, inaccurate style of the valuable, ill-trained writer, by turns clear, confused, consistent, and absurd, sometimes in good English, often in bad.

The method of teaching the mother tongue has been of late, manifestly, a much tormented topic in our educational journals and conventions and into that theme I have not the temerity to venture in this place at all. Nor do I feel competent to enter very much into the subject not particularly considered, though expressly announced for consideration in the Supervisor's Article.

"WHAT IS MEANT BY LANGUAGE LESSONS."

In one passage the Supervisor insists with great force and earnestness in his clearest and best English, that *the study of the principles* and *the practice in the use* of the language should go along together, most distinctively the essential functions of grammar in the well recognized meaning of that term as used in our elementary text books. "Study and reflection" are his words, "aid essentially in practice, * * * practice aids in learning principles, * * * and the two go best together. * * * Practice * * without principles would make machines out of scholars." But in the very next sentence, almost, these excellent words are all swept summarily away by the broad, unlimited affirmation, that in the common school, *grammar should not be taught at all*, while at the same time the use of Language Lessons early and late is advocated with most vehement contention. Now, as I understand the subject, Language Lessons, Elementary Grammar, and Primary Grammar are three different names devised by the book-makers to give attractions to their book, signifying one and the same thing, *English Grammar—tria juncta in uno*, in the common acceptance of the name.

More than three-fourths of a century ago Murray put down English grammar in his book as "the *art* of speaking and writing the English language with propriety," and this definition with immaterial variation to suit the notions of individual compilers, has been successively adopted into all our elementary text-books on the language down to very recent times, and so continues to be recognized. Occasionally of late the word science, or some phraseology equivalent to that term, has been introduced into the old definition as in the elementary works of Greene, Bullion, Whitney, and Reed and Kellogg, but in all these admirable books the treatment of the subject is confined to the *Art* supplemented as of old by the simpler principles and rules of the language. In the preface to of the "Essentials of English Grammar" published early in 1877, Whitney does indeed expressly declare that in his view "the *leading* object of English Grammar is not "to teach the correct use of language," but after designating it as "the reflective study of language," pure *science* above the realms of *art*, is careful to qualify his assertion by adding immediately that correctness in writing is *one of the purposes of the study*, that "in training the young to make them use their own tongue with accuracy and force" it is important to teach them "*the rudimentary distinctions and rules of grammar*," the full and exact conception of Murray's definition. Swinton took very extreme ground against grammatical forms and definitions in his first books on Language but the experience of ten years seems to have made him wiser. In the preface to his New Language Lessons published in 1878, he instructively says that this book "has been toned up" to obviate the objection of the many who pronounced the old book "weak on the side of the great neglect of grammatical forms." In other words, the device to teach English grammar with the grammar left out having been found a folly, this new book returns to the old and true way along which grammar leads. The "Graded Lessons in English" by Reed and Kellogg as also their Higher Lessons issued in 1878, both superior books, are formed on the old plan, practice and principles combined, with the full persuasion that there is "no other and better way to connect writing and speaking than that along which grammar conducts." So far as I am able to discern, all our modern elementary text-books on the English language, whether called Lessons or grammars, are formed on one and the same plan, the combination of persistent practice with the study of primary principles and rules in the scheme of drill, Swinton's early books, which have been condemned and discarded, in this

point of view being the only extreme variation from the old grammatical system. The methods of these many authors, analysis succeeded by synthesis, differing in minor details of taste and fancy, are also identically the same in all the essentials and substantials, one book being just about as good as another in the hands of competent teachers. If I have not entirely failed in my purpose in this matter, I have made it quite apparent that wherever Language Lessons may mean anything otherwise than Grammar Lessons, the name imports nothing good at all in the view of all the best authorities on the subject.

A few words in conclusion in relation to the English of the Nebraska Supervisor and his competency to chastise the English of the School Mistresses. In opening his article the Supervisor says: "I remember very well when I studied grammar, *for* term after term, I had never been called upon to write one single line of the English language by way of learning it," the fact stated being perhaps some palliation of the solecism of its expression. In another paragraph is this rare specimen: "The use of language is an art and * * * must be acquired principally by practice. Not only must be acquired by practice but it cannot be acquired in any other way (*identical propositions*); and there never *was* and never *will be* an individual who *could* write fluently and correctly without practice." If the average Nebraska school mistress can jumble together worse English than the Supervisor gets into this passage, the state is to be pitied. Its solecisms of mood and tense are its minor offenses. On another page is this curious sentence: "I think in teaching a written language, we have made too little use of what the philosophers call *intuition*, a *term* for which we have no good *word*." Having uttered this nonsense he proceeds to "explain." He relates how he once encountered some boys in a printing office, who, without ever having studied grammar at school at all, had, after three or four years of type-setting become sharp critics of English composition, and winds off with the following uncommon notion: "How was it," he exclaims, "that they had learned to know so much about the English language?" and answers in these words: "They had learned it by *intuition*; that is, they *had gathered a plan of doing it by seeing it done, by imitating the work of others;*" a reduplification and elaboration of the nonsense with which the passage opened, recalling, in its climax, the line of the heroic lover in one of Dryden's plays:

"My wound is great because it is so small,"

the nonsense of which on its repetition in the House of Commons provoked instant response from the Duke of Buckingham in the impromptu verse:

"It would be greater were it none at all."

Nor is foolishness in the use of terms and in absurd definitions the only folly of this singular piece of English. I have been close enough to the ways of printers in some years of my life to feel certain that there is no truth at all in the Supervisor's assumption in relation to them. Boys or girls entering the printing office with no knowledge of the principles and rules of the language become critical in composition, accurate, reliable compositors not by intuition, but only by industrious, unceasing study of the laws, usages, and structure of the language, perpetual investigation of both the grammar and the dictionary all along their apprenticeship. The length of my communication, already quite too long, I fear, for your columns, admonishes me to stop.

I am only a school mistress, not long in the service nor used to ordering my thoughts for the press. I have put my complaints and comments into as few and becoming words as I could command; and send my communication to THE EDUCATIONAL WEEKLY because I am one of its constant readers and regard it as the very best educational periodical in the land, so far as my knowledge extends.

STATE CERTIFICATES IN MICHIGAN.

An old and prominent teacher said to me a few days ago, "Any teacher who will accept a State Certificate under the present rule and requirement is a goose." "Why," I asked. "Because," replied the teacher,—"first, there is no economy in it; second, it guarantees nothing; third, it does not fill the bill for all places. A lady can be examined five times in ten years at a cost of two dollars and a half; a gentleman at a cost of five dollars. With a known record, the Certificate is granted by the township examiner without other trouble than the fee. For a State examination the average cost cannot be less than ten to fifteen dollars; the township Certificate is just as valuable and from two to five times cheaper."

Within two months, another teacher said to me "that any teacher who had made a record for himself, and built up a reputation which placed him in the fore front of his calling, deserved to be recognized by the State without cost or trouble; that it was a low estimate to place on tried experience to charge it a price for knowing something. This teacher cited an instance of a man in one of our city schools, of most marked success and education, of the ripest culture, progressive on a broad plan, with whom many of our University professors would compare unfavorably, who has been sought every year to accept the best positions in the State; and yet this man must pay a premium for a State recognition."

This teacher said he felt as though it was an insult to the good sense of the man. Another teacher said to me at Lansing,—"that the State Board of Education had made a very great mistake in adopting such a plan, for there was a manifest injustice in it. Fifteen men were to be preferred, which number might be too large, or too small, but their merit was to be entirely in the hands of the Board of Education, and they were less than human if they had not each preferred friends." Now these three teachers whose opinions I have given, are more than an average of what would be called the first class teachers of the State. Is there really a lameness in the plan devised for a state cirtificate?

Let us see. A young gentleman or lady goes to the State Normal and graduates in any of the courses, and receives a diploma which stands in place of a certificate, and has all of the recognized value of a State Certificate. Said young person goes forth armed with all the panoply of a Normal diploma, and does not need to know any of the many useful things which experience alone can teach, but may be received without further recognition from any official examiner, and enter upon the work of the school-room. Such a person has only learned to swim on a table, but is recognized by an offiicial paper. Another person has been guiding successfully some craft at sea. He has made a success of his labor; he shows himself to be a master builder; he lacks neither in the qualifications of books, nor experience; he has been doing some practical swimming in actual water; but the State says to him "We know you are meritorious; come down to Lansing and spend three days of time, pay five dollars into the general treasury, and if you answer 80 per cent of our questions, we grant you a second grade Certificate which shall last you ten years."

States, like individuals, make mistakes sometimes. I have yet to hear a teacher of any note endorse the present *regime* for procuring a State Certificate. Does the State need to know more of such men as Strong, Daniels, George, Perry, Thomas, Ewing, Church, Truesdel, Yutema, Jones, Sill, Wellington, and a host of others who have been tried, and not found wanting Should not a State Certificate be granted as largely upon a successful experience, as upon book knowledge? Is there just cause of complaint with our present system of examination? I seek truth and light. I would not be classified among the fault finders. I was one of the "geese" who would have submitted to examination last winter, if circumstances had been favorable so I could have remained from home. Let us meet this law with an intelligent spirit and sound advice. If it is not the thing, let the wise ones advise the Superintendent of Public Instruction with respect to the same, and don't let us hedge, as some have, behind a reputation, and say, "I ask no odds." Let us work as a unit on all just educational questions of the day, and feel that the greatest good to the greatest number, and that only, will satisfy us.

How many of the leading lights of Michigan will give answer, through the columns of THE EDUCATIONAL WEEKLY, for or against this law?

CEDAR SPRINGS, Feb. 23, 1880. N. H. WALBRIDGE.

THE SCHOOL-ROOM.

ANOTHER VISIT TO THE SCHOOLS.

By a Director.

We will go to the first room, where Dr. H. has charge of about 70 beginners; and see what his upper class can do by this time. The Doctor, who is a true gentleman, and quite distinguished as a practical scientist, gives illustrated lectures weekly, on chemical and philosophical discoveries and inventions, besides initiating these raw little recruits into the paths of literary acquirement, and into lines of behavior and self-restraint that are indispensable where many, with equal rights and claims, are crowded together. Their early guiding makes future government easy. He was teased a good deal at first about taking such a lowly grade, hitherto filled by young girls, old dames, or crippled old men, but his evident satisfaction with his position, his boundless good-humor, and a sense of the great profit of his labors to the grades above, as well as to his own, soon turned thoughtless jokes into quiet respect; and now, for a long time, the schools have been raised every term more and more, by the leaven which he instills at their base.

This A class is verifying their slate work in figures, which they had been busy with while the B's were taking a black-board step forward in reading, by learning a new vowel, and sounding it in connection with consonants already learned; or at least, such of them as would make actual English words. This new vowel was the quick abrupt short *i*, and as they had learned to sound *p, t, s, m, n, h*, as soon as seen, they had learned this morning to read '*it*;" and then *p it, s it, t.it, m.it, n.it, h it*: and '*in*' and then *p.in, s in, t.in, s.p.in* : and they are going to bring out *s p.it, s p it.s, m.it.s*, etc., and *t.in.t, s t in.t, h.in.t, h in.t s*. These are on the board, and one can see little faces studying them, and now and then breaking into a glow of delight over finding one out, by their own unassisted skill. They delight in this sort of work. They feel themselves going forward. They would not stay away from school for anything. They are copying the words on their slates, and while they are thus happy and busy, and, of course, entirely quiet, let us turn to the A's, who are studying in a neat row, each with another's slate, on which are little sums copied from the black-board. Only the figures *1* and 2 and *4* are used, but they are added, multiplied, subtracted, and divided according as +, ×, −, or ÷ are attached to them on the black-board. The teacher has a numeral frame in his hand. He had been round and inspected the slates as to the making and placing of the figures, while they were yet in the writer's own hands, and even the ill-arranged seemed to feel encouragement from his manner or remark, while a kindly patting was a rare and delightful reward to the painstaking, and the neatest slate was shown all along the class.

The answer to each sum being read off all round, some proving right, and some wrong, the sums are worked out on the numeral frame, which shows clearly and explicitly which answer is true, and what adding, multiplying, etc. really mean. When they go to their seats they occupy themselves with imitating the shape of the new figure which they will use to-morrow : 3 with its three tips.

There is a similarity of synthetical plan between the courses pursued in teaching reading, and in teaching counting ; and the introduction of a new figure opens up almost as great a variety of exercise in the "four rules," as a new sound with its sign and letter does in reading, by the combinations it makes with those previously learned.

There is quite a table of mastered words neatly printed on the board, in line and column, with plenty of inter-space; and these are occasionally read in all sorts of order. A visitor's call incites ardor enough to propel through the whole of them, without sign of inattention. Sometimes certain words are marked 1, 2, 3, etc., and are to be copied in that order; making, on the slates "Nat's cat;" "a fat rat;" "don't go," etc., which the learners are delighted to find making real sense. They will take these lines home for pa and ma to see what they wrote their "own selves."

They are such critics in purity of sound that they can tell exactly how each sound is produced—at which of the 3 mouth doors, and by which way of shutting the door. This essential fundamental knowledge they get as their first lesson from the Manual of Dictee, described in No. 143 of the Weekly, and the sheet of "Questions" upon it. They learn some of the sound-signs as a variation of practice, to prevent idleness or weariness, but they are not required to learn them until they enter the second grade. We go round among the busy little bees as they sit at their desk, and find that we are spared the regret of leaving, for their dismission is earlier than in the other schools by nearly an hour, and we take leave of the Doctor together.

MATHEMATICAL DEPARTMENT.

The Mathematical Department will be devoted to the elucidation of principles rather than to the solution of curious problems. Questions in transcendental analysis, being beyond the range and requirements of the majority of students and teachers, will not be discussed, except incidentally.

Communications for this department should be sent to David Kirk, Jackson, Minn.

"A SOLUTION FOR KANSAS."

A correspondent, "Kansas," in No. 147 of the Weekly, having taken exception to a certain problem as solved by Robinson, Ficklin, and others, a number of solutions of the same have been sent to this department. D. H. Davison, of Minonk, Ill., has this to say: "Enclosed find solution which I send incidentally, not expecting or even desiring it to be published, especially if a better one is offered. It is not difficult, but it may be determined not to publish a solution, especially as it may be considered a 'curious problem.' Must confess that I have a little curiosity to learn how a mathematical department can be successfully managed in an educational periodical, without mathematics (or without any mathematical demonstrations).

"By judicious management, the mathematical department can be made the most *useful*, *instructive*, and *interesting* department in the paper, and I sincerely hope it may become even so."

Legitimate problems, whose solution throws light on mathematical principles, will not be excluded from this department. Problems like the one in question, taken from a standard mathematical work, and the accuracy of whose answers is called in question, will be considered; but "curious" problems, senseless puzzles, and absurd questions, whose statements involve some illogical, or etymological side-issue, and whose answers when they can be found are of no earthly utility, are not desired. The problem under consideration is said to be the 15th on page 236 of Ficklin's Algebra.

C. L. Powers, of Hartford, Wis., sends a solution which is correct as far as it goes, but it does not give the distance between A and B, which is what is required. His solution is essentially this: Let x equal rate of travel of A and B, then $50-2x$ is where A meets the wagon, and $45+1\frac{1}{3}x$ is where B is at the same time. When B travels $(45+1\frac{1}{3}x)-(31+\frac{2x}{3})$ or $14+\frac{2x}{3}$ miles, he also meets wagon. $(31+\frac{2x}{3})-(50-2x)=\frac{8x}{3}-19$ is number of miles wagon travels in the same time. Hence the equation $\frac{\frac{8x}{3}-19}{\frac{9}{4}}=\frac{14+\frac{2x}{3}}{x}$ from which we find $x=9$

Mr. Powers should have gone a step farther and substituted 9 for x in $(45+1\frac{1}{3}x)-(50-2x)$ which shows distance between A and B. This would give 25 which is the answer required. If we can find an expression for the distance between A and B at any stage of their progress, it will show how far B is behind A when A reaches St. Louis, for this distance is constant.

The following full and excellent solution, also gives 25 as the number of miles B was from St. Louis, when A reached said city.

Solution.

A and B were traveling towards St. Louis, at equal rates—A being in advance. Let x equal the rate per hour in miles. When A reached the 50th mile-stone, he passed a flock of geese going towards St. Louis at the rate of 3 miles in two hours—1½ miles per hour. B passed the same geese at the 45th mile-stone—the geese having had time to travel 5 miles since A passed them. As the geese were traveling at the rate of 1½ miles per hour, $(5\div1\frac{1}{2}=3\frac{1}{2})$ is the time in hours from one passing to the other; and as it took B $5\div a=\frac{5}{x}$ hours to travel from the 50th to the 45th mile-stone, $3\frac{1}{2}-\frac{5}{x}=\frac{10x-15}{3x}$ is the number of hours A was in advance of B; and multiplying by x, the rate in miles per hour, $\frac{(10x-15)x}{3x}=\frac{10x-15}{3}$ equals the number of *miles* A was in advance of B; and hence when A reached St. Louis B was at the $\frac{10x-15}{3}$th mile-stone.

We must now determine the value of x.

$2x$ miles from the 50th mile-stone A met a wagon traveling at the rate of 2¼ miles per hour. B met the same wagon ⅔ of an hour before reaching the 31st mile-stone, and therefore $\frac{2}{3}x$ miles before he reached the 31st mile-stone or at $19-\frac{2}{3}x=\frac{57-2x}{3x}$ miles from the 50th mile-stone. It has been shown that B was $\frac{10x-15}{3}$ hours behind A, at the time A passed the 50th

mile-stone, to this add $\frac{19}{x}-\frac{2}{3}=\frac{57-2x}{3x}$ the time B was going from the 50th mile-stone to the place he met the wagon, and we have $\frac{10x-15}{3x}+\frac{57-2x}{3x}=\frac{8x+42}{3x}$ the number of hours from time A passed the 50th mile-stone till B met the wagon; from $\frac{8x+42}{3x}$ subtract 2 and we have $\frac{2x+42}{3x}$ the number of hours from time A met the wagon till B met it. As the wagon traveled 2¼ miles per hour, if we multiply $\frac{2x+42}{3x}$ by 2¼, the result, $\frac{3x+63}{2x}$ is the number of miles from place where B met the wagon to the place where A met it. Now the distance from the 50th mile stone to place B met the wagon increased by the distance from where B met the wagon to where A met it, is equal to the distance from the 50th mile-stone to place where A met the wagon, but i has been shown that $2x$ equals the same distance and therefore

$$\frac{57-2x}{3}+\frac{3x\times 63}{2x}=2x.$$

From this equation we determine that x is 9 or $-1\frac{5}{16}$. The negative value is inconsistent with the conditions of the problem, since the travelers were going towards St. Louis; the value of x therefore is 9. Above it was shown that when A reached St. Louis B was at the $\frac{10x-15}{3}$ th mile-stone; substituting 9 for x and the result is 25,—that is when A reached St. Louis B was at the 25th mile-stone. A. S. FISHER, Eureka, Ill.

The solution sent by "Kansas" does not give the result arrived at by the other correspondents, yet we venture to say that they are right, and if Ficklin agrees with them, he is right.

Probably it will not always be practical to publish all solutions sent to this department, but due credit will be given to all who furnish valuable matter, or send correct results, provided correspondence is directed to the department editor. Perhaps it will be well to defer the giving of solutions for several weeks after questions have been received, so that all may have time to report.

RULE FOR COMPUTING SIMPLE INTEREST.

1. If the given time contain years only, multiply Principal by rate expressed decimally and this product by number of years, if time be more than one year.

2. If the given time contain parts of a year, reduce to days.

3. Remove the separatrix in given principal two places to the left to show interest for one year at one per cent.

4. Use this formula:

$$\frac{\text{Int. at one per cent}\times\text{Rate}\times\text{Time}}{360}=\text{Int.}$$

Always cancel when possible.

EXAMPLE.—

Interest of $127.65 at 10 per cent for 1 year, 11 months, 3 days.

OPERATION.—

$$\frac{1,2765\times 10\times 693}{360}=\$24.572+$$

The reasoning for this rule is easily made plain and it has the advantage of some formula for any given time or rate. G. W. H.

OGDEN SCHOOL, CHICAGO, Feb. 23, 1880.

NOTES AND QUERIES.

TO CORRESPONDENTS:—Make queries and answers short as possible, and clear. Do not write them on the same paper with other matters, but always on separate slips, and on but one side of the paper. Put but one subject in a query or in an answer. Refer to previous queries by number and page. EDITOR OF N. AND Q. COLUMN.

No. 9. (p. 112, No. 149). "Infancy, childhood, youth, manhood and age are different stages of human life." Why not put a comma after *manhood?* The query says that nearly all standard authors insert a comma between each particular ['*after* each particular except the last' is better; *between each* is not good English], while nearly all newspapers do otherwise.

ANS. First, punctuation is based on grammar, not on delivery; hence the pauses after *manhood* and *age* do not require commas. Second, the commas between particulars indicate the lack of connection between them; and this lack of connection continues in the series, until the *and* occurs between the last two items. Third, good punctuation is the same in books and newspapers. To give a fuller explanation would require a statement of the fundamental principles of punctuation. DR. WILLARD.

[To illlstrate how doctors disagree we insert here another answer, which has not been handed to Dr. Willard.—EDS. WEEKLY.]

The authorities on punctuation are uniform in requiring a comma after each particular (hardly "between each particular", as Mr. Campbell puts it) of a series, except the last. The reasons why "nearly all newspapers leave the comma out between the last two particulars" are, simply the persistence of habit and ignorance of the rule. The writer, in no less than three daily newspaper offices, has vainly struggled to get the right practice introduced. In a very few careful journals, as the New York *Times*, the rule is punctually observed. H. A. F.

No. 10. What causes the projection of the northern boundary of Minnesota into the Lake of the Woods, as given in our newer geographies?

F. G. M., ED. WEEKLY, No. 133, p. 173.

ANS. The northern boundary of Minnesota has a tooth-like projection above the 49th parallel, running into the Lake of the Woods. It should appear on all maps that are on a sufficiently large scale. It is erroneously given in some, being either too large or too small.

When the treaty of 1783 was made between Great Britain and the United States, it defined the boundary to the point where Rainy Lake River runs into the Lake of the Woods; it then provided that the line should run in the Lake to its north-western angle, and from said angle *west* to the Mississippi, which was the boundary between British and Spanish possessions.

But when Jay's treaty was made, in 1794, it had become known that a line running *west* from the specified angle of the Lake of the Woods would never reach the Mississippi. It was then agreed that from the north-western angle of the Lake a boundary line should be run to the nearest source of the Mississippi, which is what we know as Itasca Lake. It happened that when this line was surveyed, it ran almost exactly south. In 1803, the United States acquired the territory west of this line up to the 49th parallel of latitude, so that the present state of Minnesota lies on both sides of the line surveyed under Jay's treaty, but does not go quite so far north as the angle of the Lake of the Woods. See details in the treaties named. DR. WILLARD.

No. 11. Who are the rulers of the various countries of Europe?

J. K. M., Chicago.

ANS. Great Britain, Queen Victoria. Spain, Alfonso XII. Portugal, Louis I, son of Maria da Gloria and Ferdinand of Saxe Coburg; thus, cousin to Queen Victoria. Italy, Humbert I. Greece, Christian George, called George I., son of Christian IX., who is King of Denmark. Turkey, Sultan Abd-ul-Hamed II. Russia, Czar or Emperor Alexander II., son of Charlotte, a sister of William I., who is King of Prussia and Emperor of Germany. Austro-Hungary, Francis Joseph, Emperor of Austria and King of Hungary. Saxony, John I. Bavaria, Louis II. Wertemberg, Charles I. Belgium, Leopold II., whose father, Leopold I., was brother of Victoria's mother. Holland, William III. Sweden, Oscar Frederick, grandson of the French Marshal Bernadotte.

These are all the crowned-heads of Europe. In France, François Paul Jules Grévy is President. Hesse Darmstadt, Louis IV., Grand Duke. Hesse Cassel, Frederick William I., Elector, the only prince retaining this once honored title. Baden, Frederick William Louis, Grand Duke. Mecklenburg-Schwerin, Frederick Francis II., Duke. Mecklenburg Strelitz, Frederick William I., Duke. There are several dethroned Bourbons of Naples, Parma, etc., as well as "Henry V.," Count of Chambord, grandson of Charles X., and claimant of the throne of France. DR. WILLARD.

No. 12. Motley, in his *Rise of the Dutch Republic*, Vol. I., p. 106, calls Philip II., King of Spain, "the titular King of England, France, and Jerusalem." This is under date of 1555. How could he claim those titles?

M. C. G. Chicago.

ANS. His great grandfather, Ferdinand of Aragon, husband of Queen Isabella, obtained the Kingdom of Naples; and from the days of the great Emperor Frederick II., "the Wonder of the World," the title of King of Jerusalem went with that of King of Naples. By Philip's marriage with Mary Tudor, Queen of England, he became titular King of England; and as the Kings of England claimed to be Kings of France as well, from Henry V. to George III., Philip bore the latter title also. DR. WILLARD.

—Though always excellent, the WEEKLY still improves. May subscribers multiply to your heart's content.—*La Crosse, Wis.*

THE STATES.

IOWA.—The late publication of the Regulations and Courses of Study of the McGregor public schools is a pamphlet worthy of study by school superintendents. One original feature is the publication of the college degrees held by the superintendent and teachers, and the institutions where they obtained their professional education.

The next quarterly session of the Grundy County Teachers' Association meets in Grundy Center on Saturday, March 20, in the afternoon and evening. An interesting meeting is expected.

Prof. Tyndal Palmer, principal of Grundy Center schools, will hold "readings" in different parts of the state during the spring and summer vacations.

Prof. W. H. Norton, of Cornell College, has a long and carefully written sketch of the geological features and history of Linn county, in the last number of the Cedar Rapids *Republican*. Prof. Norton concludes that there is a deposit of bituminous shale with coal underlying the Hamilton strata in the northwestern part of the county, but not in sufficient quantity to be of any practical utility, and also that the beds of LeClaire limestone are identical with the limestone at Port Byron, Le Claire, and Springfield, Ohio, from which is manufactured such superior qualities of lime.

This is a bit of state news: "Graham school district in Johnson county is getting to be a lively locality. Recently a fourteen-year-old girl thrashed her teacher, her brother gave him another beating, got fined and bound over to keep the peace, and subsequently a couple of male pupils had a lively row in the school room.

"Iowa has twenty-four institutions of learning which go under the name of college or university, not including the state institutions, except the State University and the Agricultural College. If the number could be consolidated into about four good institutions they would be of more benefit."

"In Iowa there are ninety-four lakes, and it is estimated that they cover about 62,000 acres of land. As the state settles up some of these lakes dry up rapidly. As the law now stands the land will revert to the general government, but a movement is on foot to vest the title in the state."

The full course of instruction at the college for the blind requires about seven years for its completion. During the last year, geometry, mental philosophy, geology, and English literature are completed. Music is taught, and nearly every pupil in the institution receives instruction on one or more instruments.

The course of free lectures to the students of Albion Seminary is proving a rare treat to all. Rev. B. C. Cory, of State Center, delivered the first one. His subject was "Relics from the Forests of History and Nature." It is spoken of as "beautiful in imagery, logical in thought, and eloquent in utterance." Rev. J. C. W. Coxe lectured Feb. 10, on "Qualities that win," and Rev. F. M. Robertson, later in the month, on "The Chariot Race."

CALIFORNIA.—Teachers' salaries in San Francisco range as follows: High schools, per month: one at $112.50, four at $135, one at $145, three at $157.50, four at $180, two at $283.33; Grammar schools: one at $67; one at $69; one at $70; one at $72; one at $73; one at $75; one at $80; one at $82; one at $90; one at $92; one at $180; one at 202.50; Primary schools: one at $51; one at $54; one at $58; one at $63; one at $90; one at $112.50; one at $135; Special teachers: one at $46.50; one at $67.50; one at $81; one at $90; one at $112.50; two at $135.

The following plan of appointing teachers in San Francisco seems fair and methodical, notwithstanding the recent difficulties in the matter of candidates' obtaining the questions in advance of the examination:

There are 40,293 children enrolled in the San Francisco schools; the average attendance is only 27,683. The method of appointing teachers has been changed. The names and percentage of capacity of State Normal School graduates are to be kept in the first of two registers, together with the names and details of work of experienced teachers. In the second register will be kept the names and residences of applicants who have successfully passed the necessary examination for teachers' certificates; and also the percentage obtained on examination. Vacancies in high and grammar schools are to be filled by those teachers whose percentages are highest in Register No. 1; vacancies in the primary grades will be filled by those having the highest percentages in Register No. 2. All names will thereafter be referred to a School Board Committee, who will report upon the moral character of the candidates. Those teachers appointed will hold their positions for six months, and at the end of this period will be elected permanently upon presentation of a certificate of success from the principal of the school.

MINNESOTA.—The school board at Winona has adopted a rule that "there shall be a recess of fifteen minutes duration in each of the daily sessions, and no pupil shall be deprived of said recess or any portion of it."

At Winona, on recommendation of Supt. Phelps, it has been decided that examinations shall be held in the public schools at the close of the present term, "that the schools may be examined in their respective rooms; that two days be set apart for the examinations and that the people be invited by public advertisement to attend them at their convenience, ushers being provided in the several buildings to wait upon visitors and escort them to such rooms as they may desire to visit."

OHIO.—Prof. H. A. Ford has left the editorial chair upon the Cleveland *Leader*, which he has occupied most of the time for the last fourteen months, to accept less tasking and more profitable literary work with a publishing house in that city.

The recent promotions to the Cleveland high schools number 258. The employment of two more teachers in the Central High School thus became necessary; and Prof. John B. Coit, late assistant in the Observatory at the University of Michigan, and Miss Louise Benton, of the city, were elected to the places.

Celebrations of Washington's and Longfellow's birthday anniversaries were quite general in the graded schools of the state this year. The observance of the latter has sprung into a sudden and remarkable popularity in Buckeyedom. At the Ohio Wesleyan University, Delaware, the usual burlesque procession of the students was this year prohibited by the Faculty.

Education reform occupies, as of old, a full share of attention in the State Legislature. Measures for county superintendency and securing cheap and uniform text books throughout the state have again been introduced. A bill making compulsory the military drill at the State University, now optional with the students, is also up, and a singular, but perhaps justifiable measure prohibiting boards of education from employing any teacher more nearly related to any member of such board than second cousin. A bill to provide for the election of school officers in May evokes much opposition, and the Board of Education in Zanesville has unanimously requested the Representative from that district to oppose it. The Legislature is also besought by an influential delegation of Cincinnatians to provide some means of reform in the school system of that city.

The school authorities in Cleveland are moving for the enforcement of the law prohibiting the employment of children under fourteen years of age during school hours, unless such children are compelled to work by poverty. Between twenty and thirty cases are being prosecuted by the Clerk of the Board of Education.

Spelling reform makes progress in Ohio. The late meeting of the Northwestern Ohio Teachers' Association had a printed "program" before it, and the *College Transcript*, published at the Ohio Wesleyan University, adopts "markt," "hav," "helthy," "shal," and the like.

The Ross County Teachers' Institute will meet in Chillicothe during the third and fourth weeks of August, Mr. and Mrs. H. A. Ford of Cleveland and Supt. Wm. Richardsan, of Chillicothe, have been engaged as instructors.

A free kindergarten, with volunteer teachers, was to open about the first of March in the old Spencer House, Cincinnati, under the auspices of a number of ladies of that city.

WISCONSIN.—*The Sentinel* gives the following account of a recent monthly meeting of the managers of the Milwaukee Industrial School for Girls:—

The meeting was called to order by the President, Mrs. Wm. P. Lynde, twelve members being present. The Treasurer's report showed the receipts to be $156.23, and the expenses $637.66; cash on hand $124.05. The report of the Executive Committee was mostly in relation to the application to the Legislature for an appropriation for building purposes and improvements, besides some internal arrangements in regard to domestic work. The Children's Committee reported having received six, and dismissed three, leaving seventy-five children in the school at the close of January. The School Committee reported all in their department satisfactory, or improving. The Committee on Work reported a fair amount of work done, but asked for work in the custom department, as there is but little now on hand, The report of the Collecting Committee gave the names of donors to the funds during 1879. The committee who went to Madison reported encouraging indications in regard to appropriation for the buildings and improvements needed, though probably not as large a sum as was asked for would be secured. Mrs. Rockwell, the Superintendent, reported, verbally, the school to be in a good condition, numbers constantly increasing, children all well, and at her invitation the Board

adjourned to the school-room, to inspect the inmates, at the close of the session

The new library and chapel at the State University has received the name of Assembly Hall in common parlance and a local writer has the following in *The State Journal*; Dr. Lathrop, for whom he proposes to name the hall, was the first chancellor :

"Lathrop Hall" would be a name endeared by the kindest associations to all our older alumni and more venerable citizens, and recommended by tradition to those whose memories are more brief. It would afford a pleasing departure from the vulgar system of nomenclature which has profaned, within a few years past, this, our principal seat of learning, which has given us in "Ladies' Hall" and "Science Hall," pretentious, unscholarly, and ill bred titles, worthy of the prospectus of "The Neophogen Male and Female College" which has amused the wits for some seasons past, and which in good faith offers the degree of "*Bachelor or Maid of Fine Arts*," to such as complete its academic studies "AND IN WAX." I trust the gentlemen of the Board of Regents will think well of what would so much gratify many of the warmest and most staple friends of the University, and will forgive the suggestions of a very humble person. It is hard to refrain from suggestion where the interests and feelings are engaged. "*Ubi dolor, ibi digitus.*"

Though EURIPIDES reminds us that "Zeus hates busy-bodies and those who do too much," yet the affection he bears to our University and our city, must be the excuse of your most humble servant. MR. TOWN, JR.

MADISON, Feb. 13, 1880.

Here is a man with an eye for the main chance surely :

The Sun has information that if the normal school is located here, a number of teachers throughout the state will come here and take another course of instruction. There, don't talk to us about any more deaf and dumb asylums, but give us the normal school. We could never take a deaf and dumb girl out riding on the Whitefish Bay road, and have to do all the talking. It is the business of the normal school to turn out teachers for this world and angels for the next.—*Peck's Sun.*

SPRING INSTITUTES.—The following teachers' institutes will be conducted this spring under the auspices of the Department of Public Instruction :

County.	Place.	Time.	Duration.
	BY ROBERT GRAHAM.		
Clark.	Unity.	March 15.	1 week.
Fond du Lac.	Fond du Lac.	March 22.	2 weeks.
Waushara.	Pine River.	April 5.	2 weeks.
	BY ALBERT SALISBURY.		
Portage.	Plover.	March 15.	weeks.
Jefferson.	Fort Atkinson.	March 29.	1 week.
Rock (1st dist)	Evansville	April 5,	2 weeks.
	BY JESSE B. THAYER.		
Barron.	Barron.	March 8.	2 weeks.
St. Croix.	Hammond.	March 22.	2 weeks.
Chippewa.	Chippewa Falls.	April 5.	1 week.
	BY A. J. HUTTON		
Columbia.	Portage.	March 22.	1 week.
Monroe	Sparta.	March 29.	2 weeks.
Richland.	Richland Center.	April 12.	2 weeks.

ILLINOIS.—Mrs. P. R Wilhelm, Feb. 16, took the place in Sterling Third Ward School, left vacant by the resignation of Mrs. Smith Patterson.

Some of the schools of Cairo had exercises Feb. 20 in honor of Washington. One of the grammar schools combined with the anniversary exercises an exhibition of the pupils' proficiency in phonography.

The Forreston mother who claimed $3,000 damages from the teacher for punishing her girl found little comfort in the circuit court of that district. The case was tried at Oregon, and the jury brought in a verdict of no cause for action.

The winter schools of Macon county are evidently bearing a large crop of incipient pedagogues. At the superintendents monthly examination Feb. 21, sixty-nine applicants presented themselves. Most of these had never taught.

Auburn schools celebrated Washington's birthday by giving an entertainment in the town hall on the evening of Feb. 21. Springfield papers give great credit to Prof. Lowdermilk.

Elmwood schools gave a literary and chemical entertainment, Thursday evening, Feb. 26. The literary exercises were a contest between two divisions of the High School in Declamation, Essay, and Debate. The affirmative was victorious on the topic, Resolved: "That hops are the most chaste moral and social amusement." The chemical essays were on "Water," "Oxygen," and "Hydrogen." Experiments illustrating these essays were given by the pupils under the direction of Prof. Crow.

W. H. Smith, County Superintendent of McLean, read to a large audience at Peoria, Feb. 27. A large number came in from neighboring towns to attend the reading.

We are sorry to announce the death of President Tressler, of Carthage College. He was making his mark as an educator.

The Danville school board have changed the teachers' meeting from Saturday to a half day of teaching time once a month. The attendance will not be so poor now as it was before, for the salary for that half day depends on attendance. The pupils will enjoy the change immensely.

Danville is agitated over the prospect of all the teachers being required to pass an examination by the board before the opening of schools for next year.

Peoria is having a small fight over text-books. This is not an advertisement to bring more book agents on the scene.

Gibson City has secured the services of Prof. S. S. Hamill to give a series of lessons in elocution to a class of fifty students. Mr. Wetzell, principal of schools of that city, has been conducting a private class in elocution, consisting of his pupils, and now boasts of some of the best readers in the country.

The last meeting of the Teachers' Association of Ford Co. was well attended, and was quite interesting. This association was organized last October, and has held meetings regularly ever since. The following is the program for next meeting, March 6. Word Analysis, by W. A. Wetzell; Sentence Analysis, by Mrs. C. V. Jayne; Geography, and How to Teach it, by K. Clinebell; Essay, by Prof. C. M. Taylor, of Paxton Collegiate Institute; Penmanship, by T. E. Cox; Pronunciation and Diacritical Marks, by William McKeever; and a question box, conducted by B. F. Holder.

MICHIGAN.—Prof. H. N. French, of the Marshall schools, has accepted a call from the Kalamazoo school board, to take the Superintendency of the Kalamazoo schools. Prof. French has a very enviable reputation as an organizer, and will be able to hold the Kalamazoo schools up to the high standard erected by former superintendents.

Spring Arbor is to have a new seminary building, to be built of brick, three stories high, and capacity for 300 students. Over $3,000 has been contributed, besides team labor to haul all the material, and 132 days of hand labor.

Geo. A. Parker, principal of the Port Sanilac schools, enrolled 132 pupils during the month of January and is doing sterling work.

The diphtheria has abated sufficiently to permit the East Saginaw schools to be reopened March 1.

Miss Cora Stout, St. John's, is showing herself possessed of good ability as a teacher of elocution. The Ovid *Register* speaks in very flattering terms of her success.

The following statistics in regard to the State Normal School appear in the report of the Superintendent of Education: State Normal School, Ypsilanti, the Rev. Joseph Estabrook, A. M., principal, organized in 1852, has 12 instructors, 543 students; graduated last commencement, 86; whole number of graduates, 787; value of buildings, and grounds, $85,000; amount of productive funds, $68,966; number of volumes in library, 2,373; amount of legislative appropriation, $31,473; annual cost of tuition per student, $10; average price of board per week, $2.75.

The total cost per capita for education in some of the leading graded schools of the state is as follows: Adrian, $13.41; Ann Arbor, $16.07; Battle Creek, $14.17; Bay City, $13.90; Detroit, $16.11; East Saginaw, $16.14; Flint, $14.36; Grand Rapids, $14.87; Lansing, $14.43; Saginaw City, $13.01; Ypsilanti, $14.65. As regards the average number of pupils in attendance, Ann Arbor, with 1,355, stands sixth. In the number of teachers employed it holds the same rank. The average number of pupils to each teacher is 41 in the schools there, and 40 in Ypsilanti.

IOWA.—Pres. Welch gives some valuable items concerning the State Agricultural College. The law of Congress declares that the final purpose of the institution shall be to furnish "a liberal and practical education to the industrial classes in the pursuits and professions of life." He says :

"The Agricultural College has 165 graduates, 50 of whom are ladies, 115 young men. Of these last 23 are farmers, 10 professors and teachers of agriculture in Agricultural Colleges, 1 an inventor of farm machinery, 2 veterinary physicians, 13 engineers and mechanics, 12 business men, 19 teachers, in general principals of graded schools, 4 editors, 6 physicians, 1 druggist, 2 ministers, 19 lawyers, 2 unknown.

"Of under graduates about 1,000 have attended the institution since its opening, and these have mostly gone back to the farms with character and habits of labor more or less influenced by the instruction received at the college."

WORK FOR FRIDAY AFTERNOONS.

What Can be Done with a Twelve-Dollar Microscope.—IV.

PROF. S. CALVIN, Iowa State University.

A VISIT to any pond or sluggish stream will enable us to provide material for another lesson with the microscope. Take an ax along and chop through the ice if that be necessary; the object is to collect a quantity of the plants and mud that may still be found in collectible shape even though covered with ice. A small quantity will be sufficient. Put the collection in a wide-mouthed bottle with a little water, and carry home for study at the first convenient leisure. Unless we are experienced collectors we will find more in that little bottle than were ever "dreamed of in our philosophy" and, whether experienced or not, there will be vastly more than can be profitably examined or exhibited in a single afternoon. There will be fresh-water shrimps with backs arched like the rainbow, darting about from one place of concealment to another; the oddest kind of big-headed fellows, with slender bodies, a tail ornamented with four plumose bristles, and a single eye in the middle line of the head, will be found moving themselves about in a very uncertain, jerky manner; and then there will be queer little creatures that seem to be thoroughly impressed with the idea that the whole end of existence is to kick away for dear life with, what seems to be, a single foot lying between two beautiful, trasparent plates that cover the sides of the body like the shells of a clam. But, interesting as these objects are, they are not the ones we want just yet. If we continue to combine biological instruction with entertainment, it will be more profitable to give attention to a multitude of moving creatures, smaller and simpler than the minute crustacea just noticed. If the bottle be allowed to stand for a few days in a moderately warm room until the plants begin to decompose, the lowly creatures we are looking for will be all the more abundant. They will make their appearance under a great variety of forms; but one type, large, easily studied and sure to be present, may be selected as the representative of the entire group. It is more or less cylindrical in shape, with ends neatly rounded off. One side of the body for about half the length is flattened or even concave, and the flattened area manifests a decidedly spiral twist. The creature progresses with a very deliberate, graceful, gliding movement, all the while revolving slowly on its longitudinal axis. Unless when backing out of some little corner, it moves with the spiral end foremost. It is called *Paramecium*, and is one of the prettiest as well as one of the largest of the animalculae. We must try to corner one and study it carefully. The body is transparent and delicately tinged with yellow. A great many granular specks, sprinkled among a number of larger spots of varying shape and color, may be seen in its interior. If we watch the spots closely we will soon discover that two of them are remarkable for the fact that they appear and disappear with great regularity. These are the *contractile vacuoles*, organs of no small importance in all the animalculae. It is true that most of these organisms have but one vacuole, but creatures of the dignity and standing of Paramecia must have something to distinguish them from the common herd, and as they have two, Ehrenberg and others supposed for a long time that the vacuoles were, in some way, connected with reproduction, but it is now quite certain that they are respiratory organs. Each vacuole is a round, clear, well-defined space, filled only with a watery fluid. The walls collapse apparently, at regular intervals so as to blot out the little spot completely for an instant, and then expand again until the vacuole attains its full dimensions. A beautiful system of radiating canals often puts in an appearance, as if by magic, just at the moment of collapse, and converts the disappearing vacuole into the center of a many-rayed star. The canals vanish again as silently and mysteriously as they came, while the vacuole expands.

Let us now prepare another slide, but before putting on the cover we must mix a little indigo with water and add a small drop to the cell in which the Paramecia are to be examined. The minute grains of indigo will be of advantage in two different ways. In the first place, by making the currents of water more easily observed, they will allow us to see very clearly the action of the cilia with which the whole body is covered. We will see also that, when the animal is at rest, the currents created by certain cilia all tend toward a point in the flattened, spiral area near the middle of the body. Just at that point, if we have proper facilities for observation, we will find the permanent mouth, and the object, for which the currents we have been observing were created, is to bring food within reach of delicate, lashing hairs that stand ready to force it into the mouth and down the short gullet. The second advantage afforded by the indigo has become apparent by this time. Minute grains of it are forced down the tiny throat, and, after being formed into pellets, are pushed on into the interior of the body. Our Paramecium rather seems to like a diet of indigo, for pellet after pellet of it takes up its course along what may be regarded as the alimentary tract, until the whole course through which the food passes becomes filled with dark blue specks, and even then the little fellow reaches out for more. The course taken by the food can now be followed without difficulty, and it will also be easy to make out the fact that there is no real alimentary canal. The specks of indigo are made, simply, to traverse, in a more or less definite line, the soft protoplasm occupying all the interior of the body. Indeed, the whole creature is nothing but a little lump of protoplasm with a denser pellicle on the outside. You will soon see that, altogether, it is equivalent to just one cell, and that its vacuoles, mouth, cilia, and other organs, that create the impression of complexity of organization, are only so many modifications imposed upon the simple organic unit.

Among the multitude of Paramecia with which the field of the microscope is often crowded you will hardly fail to notice some that are deeply constricted at the middle, something like the figure 8. This is one of the stages in the ordinary process of reproduction, and patient watching will be rewarded by having that perpetual miracle of creation—the production of a new individual—performed before our eyes. The constriction will be seen to deepen more and more until finally the parts separate, and what was one animal becomes two. In Torula, if you remember, we had beautiful illustrations of how new individuals are produced by budding. We have just witnessed in Paramecium another method, namely, reproduction by *division* or *fission*. Observe, however, that both methods consist in making the new individual form a portion of living protoplasm detached from another and are not essentially different after all.

Another method of reproduction, which, in its beginnings at least, is the very opposite of fission, is common among these low organisms. You will be certain to find numbers of Paramecia yoked together in pairs. Two individuals, in consequence of some real affinity, become attached to each other in the most literal sense of the term. Their destinies are completely united from that time on, and let it be said to their credit that the longer they remain together the more completely do they become absorbed one in the other. Indeed, the two animals are soon perfectly fused and blended into one, and then activity ceases and the protoplasm in the interior divides up into a great many little particles which develop into spherical bodies each with vacuole and cilia and other organs needed for independent existence. Then by the breaking of the external sack the little spheres are liberated, and, propelled by their self-acting oars, they start off gaily to encounter whatever of incident or accident is likely to fall within the experience of a young Paramecium. This method of reproduction is called *conjugation* and is most easily observed in the smaller Kolpoda and slipper-like Paramecium that may be procured at any time by simply steeping a little hay in water for a few days.

In one of the jars before me, the contents of which were fished out from under the ice about two weeks ago, the water is fairly milky with swarming infusoria. The large Paramecium is most abundant, but it has to contest its right of possession with many other creatures, some of which are larger and many smaller than itself. One of the larger forms is a perfect mammoth among animalcules. It assumes a great variety of shapes, but in one of its characteristic attitudes it resembles a trumpet, and hence the name, *Stentor*, by which it is known to microscopists. It is usually present among decaying weeds and leaves taken from ponds or slow streams, and although it never occurs in such multitudes of Paramecium, yet a little patient search in the right places is sure to find it. When once found it will be an object of rare interest to the owner of our small microscope. He will see, without difficulty, the great cavernous mouth at the origin of a curious spiral beset with cilia. The cilia, themselves, strong and active, and in their constant lashings producing the illusive appearance of a revolving wheel, will be plainly visible. The beaded alimentary tract and other essential apparatus will be seen in the interior, while dark stripes or striæ will be found extending longitudinally along the external surface of the body. The dark surface striæ are supposed to be areas in which the protoplasm has acquired, in an unusual degree, the property of contractility and would thus represent the muscular system of higher animals. Whether this be true or not, it is certain that Stentor possesses wonderful powers of expansion and contraction, and yet it has nothing that could be called muscles. The whole animal, remember, is a single cell or its equivalent, and all its organs are modified directly from simple protoplasm; the smallest muscle imaginable consists of an indefinite number of modified cells each one of which is structurally equivalent to the whole of Stentor. Neither can Stentor or Paramecium have anything that would rank as nerves, and yet both animals manifest undoubted sensibility. As we study these low creatures the fact becomes apparent—and the more apparent, the more wonderful

it seems—that we are dealing with organisms that have few real organs, that have irritability without either nerves or muscles, that carry on digestion, assimilation, respiration, reproduction, secretion, excretion, and all without any special apparatus for either function, and that have all functions performed by simple, or only slightly modified, protoplasm. Such facts raise our estimate of the properties of protoplasm and lead us to see that in its simplest form it has power to carry on all vital processes.

THE HOME.

A CHILD'S FANCIES.

BY MRS. L. C. WHITON.

I think that this world was finished at night,
Or the stars would not have been made;
For they wouldn't have thought of having the light
If they hadn't first seen the shade.

And then, ag in, I alter my mind,
And think perhaps it was day,
And the starry night was only designed
For a little girl tired of play.

And I think that an angel, when nobody knew,
With a window pushed up very high,
Let some of the seeds of the flowers fall through,
From the gardens they have in the sky.

For they couldn't think here of lilies so white,
And such beautiful roses, I know;
But I wonder, when falling from such a height,
The dear little seeds should grow!

And then, when the face of the angel was turned,
I think that the birds flew by,
And are singing to us the songs they learned
On the opposite side of the sky.

And a rainbow must be the shining below
Of a place in Heaven's floor that is thin,
Right close to the door where the children go,
When the dear Lord lets them in.

And I think that the clouds that float in the skies
Are the curtains that they drop down,
For fear when we look we would dazzle our eyes,
As they each of them put on their crown.

I do not know why the water was sent,
Unless, perhaps, it might be
God wanted us all to know what it meant
When we read of the "Jasper Sea."

—*Wide Awake.*

A REMEMBERED TEACHER.

BY WILLIAM C. WILKINSON.

I see him now, importunate, eager, bold
To push for truth, as most to push for gold;
Young then, with youth's fine scorn of consequence
He weighed no whither, so he knew his whence—
Asked only, but asked hard, Is it a fact?
That point well sure, deemed then he nothing lacked.
Truth was from God, she could not lead astray.
Fearlessly glad he walked in Truth's highway;
Who joined him there, had fellow stout to cheer;
Who crossed, met foe behooved his weal to fear;
His quick, keen, urgent, sinewy, certain thrust
Well knew those knights who felt it in the joust.

Ideal Christian teacher, master, man,
Severely sweet, a gracious Puritan,
Beyond my praise to-day, beyond their blame,
He spurs me yet with his remembered name!

—*Scribner for February.*

—A wonderful thing is a seed,
The one thing deathless forever!
The one thing changeless,—utterly true,—
Forever old and forever new,
And fickle and faithless never.

Plant blessings, and blessings will bloom;
Plant hate, and hate will grow;
You can sow to-day,—to-morrow shall bring
The blossom that proves what sort of a thing
Is the seed, the seed that you sow.

LONGITUDE ONE HUNDRED AND EIGHTY.

AMONG seaman in general, there are two meridians of specia interest. One is the line of longitude which passes through Greenwich; and this is called Longitude Naught. The other of these two meridians might be termed Longitude Naughty; because it often confuses the ideas of the passengers who now cross the Pacific Ocean from California to China, Japan, and Australia.

Now, if any young readers have not studied the subject of longitude, they will find it profitable and interesting to do so, and find out about this thing. Longitude is defined by imaginary lines, called meridians, drawn lengthwise over the earth's surface and meeting at its poles, thus dividing the surface of the globe into three hundred and sixty parts, or degrees, of longitude.

Of course, any one of these meridians might have been taken as the point to start from in calculating longitudes; but, since the English, as a people, held the highest position in astronomy, navigation, and chart making, they naturally chose to represent the first meridian as drawn through their royal observatory at Greenwich, and it is now generally recognized as the first meridian; so that, as was implied in the beginning of this article, all longitude is practically reckoned east or west of Greenwich. Now, as the longitude is reckoned from the meridian of Greenwich, so the hours of time may be said to *begin again* at the meridian of 180°, which is exactly opposite, on the other side of the globe.

Longitude is calculated by time, and in this way: When a navigator wishes to know the longitude his ship is in, he finds (by observation of the sun or other heavenly bodies) the true time of day at the ship. He then compares this with the time at Greenwich, shown by his chronometer, and thus he gets his longitude in time, that is, in hours, minutes, and seconds, which he turns into degrees of longitude by multiplying by fifteen; for, as each of the earth's 360 meridians of longitude is rolled directly under the sun once in every twenty-four hours, then 360 degrees of longitude must be equal to twenty-four hours of time, or fifteen degrees of longitude to one hour of time.

There is no such thing as 24 o'clock, for we reckon twelve hours before noon, and twelve hours after noon; and so, also, there is no 360th degree of longitude, but 180° east and 180° west, making *together* 360 degrees.

Now, the apparent noon, or twelve o'clock apparent time at any given place, is the time when the earth, by her rotary motion from west to east, rolls the meridian of that given place directly under the sun, and therefore the meridian of Greenwich comes under the sun one hour sooner than the meridian of 15° west. So, when it is twelve o'clock, or noon, at Greenwich or any other place on the meridian of longitude naught (for all places in the same longitude have the same time, no matter what their latitude may be), it will be eleven o'clock forenoon at all places in longitude 15° west, consequently, only ten o'clock forenoon in longitude 30° west, 9 o'clock forenoon in longitude 45° west, and so on, counting back one hour of time for every fifteen degrees of longitude. Thus we find that, when we get across the Western Hemisphere to longitude 180°, we are twelve hours behind the time at Greenwich; or, when it is noon on January 1st at Greenwich, it is midnight, or just the commencement of January 1st, at the longitude of 180°. But, for the same reason, by the rotation of the earth from west to east, any place in 15° *east* longitude will come under the sun one hour *before* Greenwich; or, it will be one o'clock in the *afternoon* at those places when it is only noon at Greenwich, and so, count-

ing across the Eastern Hemisphere, one hour ahead of Greenwich for every fifteen degrees of longitude, we come to the longitude of 180°, twelve hours *ahead* of Greenwich time.

Now, on January 1st, it is midnight, or the end of January 1st, say, for instance, one inch on the *west* side of meridian 180°. But we have just seen that, at that very same time (that is, noon, January 1st, at Greenwich), it is only the beginning of January 1st at, say, one inch on the *east* side of meridian 180°; so that there is twenty-four hours, or one whole day, difference in time between two persons supposed to be standing, one immediately on the east side, the other immediately on the west side of 180°; and so, while it is noon of January 1st with the one at the east, it would be within a few minutes of noon, January 2d, with the one at the west. Therefore, by stepping across the meridian, the day of the week and the date would be changed. The one who stepped from east to west would lose a day, and the other, stepping from west to east, would have two successive days of the same name and date, and so would gain a day.

But we have here used the words East and West as you use them every day, that is, as directions according to the points of the compass, and you must remember that if we reckon in that way at the meridian itself, then the *Western Hemisphere* lies to the *East* of the line, and the *Eastern Hemisphere* to the *West* of it. For, as the geographies tell us, the Eastern Hemisphere extends East *from Greenwich* over Europe, Asia, etc., to meridian 180°, and the Western Hemisphere reaches west from Greenwich over the Atlantic Ocean, the American Continents, and the Pacific Ocean, to the same meridian. So, suppose a passenger on a steamship from San Francisco to China goes below, and "turns in" or goes to bed, at nine o'clock on the evening of February 21st, the ship being then in west longitude, and, say, thirty nautical miles this side of the meridian of 180°, and steaming at the rate of ten miles an hour; then, at three minutes before midnight, she will have sailed twenty-nine and a half miles, placing her half a mile on the *east* side of 180°, according to the compass, but, of course, still in *west* longitude. As we have seen, the time at Greenwich is then twelve hours *ahead* of the time in the vicinity of 180° *western* hemisphere; therefore, as it is February 21st near midnight at the ship, it will be February 22d near noon at Greenwich.

Now, suppose at this same moment a sailing ship is lying becalmed a mile from the steamer, to the *west* according to the compass, but of course in the *eastern* hemisphere. The time on board that sailing ship will be twelve hours *ahead* of *Greenwich*, or near midnight February the twenty-second, the whole of February the twenty-second having passed with them; while on board the steamship, February the twenty-second is just about to commence. Now the steamship steams across the meridian of 180°, and in a few minutes is alongside the sailing ship, both being in the Eastern Hemisphere. The steamship's time will now be the same as the ship's (for the latter has not moved from her position, being becalmed), and that time is the beginning of February the twenty-third, so that February the twenty-second is dropped from the calendar of the people on the steamer. In the morning, our passenger comes on deck, and, being a patriotic American, asks:

"Do you make any celebration of Washington's birthday at sea?"

"Yes," replies the officer; "when it occurs, we load and fire the guns, and run the flag up."

"Then I suppose you will celebrate it to-day?"

"No, I think not," says the officer, "as Washington's birthday comes on the twenty-second, and this happens to be the twenty-third."

"Beg pardon," says the passenger, "but this is the twenty-second."

"It should have been, in the ordinary course of events, but we crossed the line of 180° during the night, and it is now the twenty-third," says the officer.

Our passenger, not having thought on this subject before, concludes to keep his diary by his own date, and, consequently, when he arrives at Yokohama, he finds he has got the wrong day of the week and the wrong date. He proceeds to Hong Kong and finds there, also, that he is a day behind, and, of course, he has to change his date, which he should have done when he crossed 180°. And should he return to the United States by the way of the Pacific Ocean, when he crosses 180° he must call two successive days by the same name and date. Therefore, it is said, we gain a day coming from China, and lose a day going there.

If this is not sufficiently clear to any boys or girls, let them place themselves on the west side of a table, put a globe on the table in front of them, and light a candle to represent the sun, placing it east of the globe. Now, let them suppose that time has not yet begun, and that they are going to mark the very first day, which may be called January the first, year one. We are told in the Bible that the evening and the morning were the first day. So if the evening was the first half of the day, time must begin at noon.

Now, let some one place the meridian of 180° on the globe directly opposite the candle, or sun, having the North Pole depressed toward the North, and with his right hand on the globe, revolve it from him, which is the way the earth revolves. It then will be seen that the Eastern Hemisphere comes under the sun first, and as each meridian rolls under the sun, all places on that meridian will have their first noon, or noon of January the first, year one. Likewise, when the globe has rolled half way round, the meridian of Greenwich will be under the sun, making it midnight where we started from, so that a person in, say, longitude 179° 59′ east, will have spent half of his first day.

Now, as the Western Hemisphere is rolled under the sun, giving all places there their first noon, it will be found that when longitude 179° 59′ west comes under the sun, a person living there will have *his* first noon, or noon of January the first, year one; but it will now be seen that the earth has only to roll two miles more of longitude, which occupies about eight seconds of time, to bring our 1st personage under the sun again, or to give him noon for the second time, which must be January the second, at noon; so that two persons, although within a mile of each other, if on different sides of the meridian of 180°, will always have a different date and a different day of the week. But all this, of course, is so only at the meridian of 180° and no where else. *John Keiler, in St. Nicholas for March.*

CORRESPONDENCE.

WRITTEN EXAMINATIONS OF RURAL DISTRICT SCHOOLS.

To the Editors of the Weekly:

In compliance with your request I send a few thoughts concerning written examinations of country schools, and my plan of conducting them. City schools are usually acknowledged to give superior advantages over country schools, but in enumerating the various advantages afforded by the former, it is my opinion that due value is not usually given to the frequent written examinations that are required in nearly all city or town schools. The majority of country schools have no examinations,—either oral or written. Pupils are allowed to be their own judges of their attainments, and to decide for themselves where they are to commence, whether they shall do any reviewing, what length of lessons shall be taken daily, and how much ground shall be covered during the term. No test is applied to ascertain the pupil's fitness to advance, or the necessity of review. The result is,—the pupil's main ambition is to go through the book. Where written examinations are practiced, thorough preparatory drills and reviews are given.

After several years' experience in graded schools where weekly written examinations were held, and where I became thoroughly satisfied of their benefit, I was elected to the office of County Superintendent of Schools. While visiting country schools I observed that it was not unusual to find pupils far in advance, in their books, of their natural attainments, particularly in Arithmetic. I have found pupils in difficult work in Higher Arithmetic who could not do for me quite simple work in Fractions. I found that written examinations were seldom, if ever, held in our country schools. I noticed that applicants for Certificates who had been educated in city schools almost invariably did orderly work, even if they failed to pass examination, while those from country schools frequently put their work on paper in such form that I could hardly tell what was meant. I became convinced that written examinations would do much toward building up our country schools, and undertook to devise a plan. After giving considerable thought to the question of whether I could take upon myself the work of preparing and mailing topics, and marking manuscripts for so many schools, and whether such an innovation would be practical, I decided to try the experiment. I prepared questions in four topics, which I enclosed in four separate envelopes, each sealed, and on the envelope was printed the date on which it was to be opened, and the examination held. With the questions I sent circulars giving full instructions as to uniform paper, margins, method of conducting examinations, etc., and requested the manuscripts to be sent to my office where they were to be filed, subject to the inspection of any interested. I stated about what ground we would go over, for the purpose of having teachers give a thorough preparatory drill. The success of the experiment far exceeded my expectations. Eighty schools (we have 111 districts) did the work and sent me the papers. Although it was a new thing, and I expected to encounter opposition from patrons, the opposition was very slight.

Most of the people here appreciate the work. With the help of a few teachers I succeeded in getting the manuscripts marked, and reported through our county papers, which schools and which pupils had done the best. Last winter I sent a second circular with questions on four topics, and stated that the work would be exhibited at the county fair, and must be voluntary on the part of the pupils. I received work from eighty-three schools and placed it on exhibition at the county fair last fall.

Our exhibit was visited by pupils and patrons from nearly every school in the county, and it was generally conceded that no one department at the fair interested the people more than the educational exhibit. The second examination was a decided improvement upon the first, in neatness of work, and in following directions about margins, headings, etc. It is valuable to a child to be able to prepare a neat, systematic paper, even if he answers correctly but a small per cent of the questions.

My plan is similar to that of the Comparative examinations. In some respects I prefer mine. The committee require several topics to be done in one day, while we have four topics on four consecutive Fridays. I think that an examination on one topic at a time is all that should be asked or desired. There is danger of permanent injury from over-work in this direction. The committee on comparative examinations do not report upon the work, and the schools doing their work have no way of knowing how they compare with other schools. I make a record of the average standing of each pupil and of each school, and report through the county papers. Topics prepared for schools by their own superintendent will receive more attention than those prepared by any other authority, as demonstrated in the fact that 75 per cent of my schools have done my work, while but three per cent of the schools of the state have taken the comparative examinations. One fourth as much work was returned to me from our county as to the committee on comparative examinations from the state. I do not wish to be understood as undervaluing the comparative examinations. Many of the superintendents are so situated that they could not give the time to examining their schools that I have done, and it is better to have it done by some outside authority than not at all; still, there is in my opinion, one valid objection to the comparative examinations;—that is, the requiring of more than one topic in a day. The committee require for this winter eight topics in two days. I think it must be admitted that pupils would derive more benefit from the work, by having it scattered along through the term. By doing the work on eight consecutive Fridays there would not be enough at one time to discourage or fatigue pupils.

The following is included in my recent circular to teachers:

At the opening of the forenoon session, Friday, Feb. 6, I wish you in presence of your pupils to open the envelope marked Spelling. You will find 50 words, selected from words in common use. Dictate, and have the pupils write in columns numbering each word.

Friday forenoon, Feb. 13, open the envelope marked Arithmetic. You will find three grades of questions. The first grade will include work from Notation to Square Root; the second grade from Notation through Fractions and Denominate Numbers; the third grade from Notation through Division. If you have pupils in Arithmetic who are competent to do some written work, but have not finished Division, prepare for them a set of questions, suitable for their capacity, which you may denominate fourth grade. To prepare your pupils to do the first grade work, give them a review in Longitude and Time, Compound Proportion, Insurance, Partial Payments—U. S. Rule— Equation of Payments, True and Bank Discount. For the second grade work, review in Fractions, Denominate Numbers, Denominate Fractions.

Frida forenoon, Feb. 20, open the envelope marked Grammar. The work will consist entirely in originating sentences containing certain parts of speech, phrases, and clauses. An extended knowledge of Grammar will not be necessary in order to do the work, but a readiness to originate sentences. Preparatory to this examination, give your pupils daily practice in originating sentences. Do not allow them to give examples from their books, but require all examples to be original.

Friday forenoon, Feb. 27, open the envelope marked Letter Writing. You will find a subject for a letter, and the name of the person to whom I wish it addressed. Previous to that time, instruct your pupils how to place date, address, and signature in proper form on a letter; teach them the proper use of punctuation marks and capitals, particularly in date, address, and signature. I would advise you to require your pupils to write letters a few times before the date for the examination in Letter-writing; telling them whom to address and on what subject to write. If you are in the habit of requiring compositions, substitute letters.

On the dates of the examinations do not give any instructions that will assist pupils in the examination. All drill and preparation must be previous to these dates. Do not, under any circumstances, open the questions before the dates specified. If, for any reason, you cannot examine your schools on those dates, do not examine them at all on these questions. The value of these examinations consists in the date being uniform, thus precluding all possibillity of pupils knowing before the examination what the questions will be.

Please fill the enclosed blank and sign the certificate, and return with the examination papers. This examination is not to be confined to pupils who are at present pursuing these branches. I wish particularly to have the work of those who have *finished* and *dropped* these studies. Please invite the directors to be present at the examination. Before closing let me urge you again to interest your pupils in this work; and not only the pupils, but the parents and directors. The value of written competitive examinations is conceded by our best authorities on educational matters, and the only argument made by those opposed is the opportunity and the temptation for dishonesty. I hope this examination will be conducted in a way that will not allow such a charge to be made justly against any teacher in our county. If you have the zeal in the cause of education that marks the true teacher, you will be ready to point out the almost self-evident benefits to be derived from the examination, and thus make co-workers of your patrons. Whether your pupils take hold of this work with enthusiasm or with indifference depends almost entirely upon the manner in which the subject is presented by you.

Will you not see to it, that we have an educational exhibit next fall that will be a credit to you and your pupils, and that will give the people of Winnebago County some idea of the work that our teachers are doing? I desire each of you to write to me upon receipt of this circular, stating whether or not you intend to participate in this work; and if not, please give reasons and return the questions unopened.

The blank referred to is as follows:

Township——— District No.———

Directors: ——— Term of office expires April 188—
——— " " " " " 188—
——— " " " " " 188—

The present term of school commenced——— 188—
" " " " " will close——— 188—

No. of pupils enrolled ———
" " " examined in Spelling ———
" " " " " Arithmetic ———
" " " " " Grammar ———
" " " " " Letter Writing ———

Teacher's Certificate.

I hereby certify that previous to the date of the examination I did not know what the questions were; that to the best of my knowledge none of my pupils gave or received assistance during the work, and that as far as I know, the examination of my school has been conducted honestly and impartially.

Signed this———day of———1880.

———,Teacher.

The blank is printed on paper the size of the paper required for the examination manuscripts, and is used as a fly leaf in binding. With this precaution I do not think there is much chance for dishonesty. A teacher certainly cannot be dishonest in this work without its being known by the pupils and patrons, and injuring his own reputation as a teacher. In one of our districts, the directors went to the school house and conducted an examination; the teacher being sick on the required date. In another district the directors offered premiums to the pupils doing the best work. In a large number of our districts, the directors visit the school on examination days, and in some schools I have heard of their doing the examination work,—the same as the pupils.

Where such an interest is felt by school officers, there is not much chance for dishonesty. Should it occur occasionally, that is no reason why the large majority of schools that do follow directions carefully and honestly should be deprived of the advantages of such examinations.

MARY L. CARPENTER.

ROCKFORD, ILL., Feb. 25, 1880.

A HINT ON TEACHING READING.

THE time of the last institute of the third and fourth grades in this city was mostly consumed by our friend Vaile, the author of "The Trough," to whom we paid our respects a few weeks ago. The plan of the exercise was to play that the institute was composed of children to be drawn out as to the meaning of a Third Reader lesson by the suction process of Vaile's pumps as an adjunct to his literary trough. The exercise was funny. Notwithstanding that the uppermost thought in the minds of the teachers was, "O Vaile, *vale*!" those present enjoyed the performance hugely. The object of the exercise was to show disregard to expression in reading and dwell upon the importance of the meaning of what is read, on the ground that the principal part of our reading is silent reading. It is al very well for those who decry elocutionary reading to insist on the importance of knowing the sense prior to giving expression to the words; but did it ever occur to them that the proper expression is to children the chief and in many cases the only means of arriving at the sense of the passage? How this little fellow could have the audacity to decry the efforts of teachers to make their pupils give good expression in reading, after listening to the admirable exercises of Miss Royce's class at a previous institute, is one of those freaks which nothing but the want of mental balance can account for.

Any body who sets up meaning against expression, or expression against meaning, in reading, is a lop-sided chalratan. It is not Expression *vs.* Meaning, or Meaning *vs.* Expression; but Expression *and* Meaning. Both go hand in hand; mutually aid each other in the cultivation of the voice and the mind. There may be delivery without adequate conception, or conception without the power of effective delivery; but the insisting upon either, to the neglect or disparagement of the other, leads to a one-sided and distorted development, which was well illustrated in the utterance of the gentleman in question, whose method of rendering, "What is that you say?" was, "Whassatyousay?" and of "Give us the meaning of that line," "Gussameaninguvzatline." Verily, what it takes stimulants to do with some people is observed in others through their own egotism and perversity.

HIE THEE TO A NUNNERY.

First Lady Teacher:—No, I won't be a nun, no I sh'an't be a nun;
I'm so very fond of pleausre that I can't be a nun;
Second Lady Teacher:—Were it not a pity such a pretty girl as I
Should be sent to a nunnery to pine away and die?

CHORUS.

No, I won't be a nun and I shan't be a nun;
I'm so very fond of pleasure that I can't be a nun.

Board of Educatiou:—But you must be a nun and marriage you must shun;
If you marry you'll be sorry, for then of you we'll have none.

Teachers:—No, I won't be a nun and I shan't be a nun!
I'm so very fond of pleasure that I can't be a nun.
Board:—But you must be a nun, and marriage you must shun;
If you marry you'll be sorry for then of you we'll have none.

That is the kind of harmony we have in the schools of Chicago. Truly, a new dilemma for the teachers of this city to hook their fortunes on. As if the dilemmas already besetting their pathway were not sufficiently numerous. Escaping from one dilemma to another the persecuted fair will find themselves in a *cul de sac*. Thus the question as to the advisability of marriage is added to the already numerous perplexities of pedagogy. To flog, or not to flog; to draw out, or to cram; to generalize, or to specialize; to go it categorically, or to do it topically; to allow self-reporting lying, or to practice non-self reporting spying; to be satisfied with moderate results, or to put on the screws and insist upon double distilled compressed intellectuality on draft, have been puzzling alternatives heretofore; but these were merely professional and impersonal considerations, whereas to wed, or not to wed, is a question in which the judicious coolness and calm reflection of the teacher cannot be exercised. She—the rule applies only to *she*—may not be entirely responsible in the matter; may be taken by surprise; may have some predilections irrespective of the mathematical feature of the question; and, in losing her heart, lose her official and psychological head. Does the Chicago Board of Education feel called upon to legislate for posterity, or rather against it, on the ground that, since posterity has not done and is not likely to do any thing for that body, that body is under no obligations to show any regard for posterity?

The following are the gentleman who assume to regulate the heart affairs of the lady teachers of Chicago, or, rather, the *female* teachers, as the rule calls them—a word that applies with equal propriety to one-half the brute creation:

Phil. Hoyne—portly and pious—of late. E. Frankenthal——. W. J. English—"the university man," the Irish Jew—noted chiefly for murdering his name-sake. M. E. Stone—correct generally, but under the delusion that he has a mission to keep women from working too hard. W. Curran—spirited and able, but too anxious to give the young girls a chance. P. O. Stensland—a new man. J. C. Richberg—dealer in "grease" by profession and heredity—all that's left to Doty now—but not so bad as he might be, considering.

THE RECESS.

—*Father*—addressing his little boy, who has brought home a bad mark from school—"Now, Johnnie, what shall I do with this stick?" *Johnnie*—"Why go for a walk, papa!"

—An old lady in Wichita says she never could imagine where all the Smiths came from until she saw in a New England town a large sign, "Smith Manufacturing Company."

—"Is the Indian a citizen?" asks the *New York Times*. This question must not be answered too hastily. Let us consider whether we can rob him most effectually as a citizen, an alien, or a ward.—*Elmira Free Press.*

—So many societies for the promotion of things are established, that Johnnie wants to know why somebody doesn't get up a society for the promotion of boys in schools, without making them study so.—*New York Mail.*

—"Mr. Peelrod," said she, according to the Graphic, "Mr. Peelrod, we have for breakfast the glyptocephalus cynoglossus." (Peelrod had always been used to calling them flounders when fishing on a Sunday at the Harlem wharves.)

—After family prayer, a few evenings since, a little Quincy boy asked: "Mamma, how can God hear folks pray when He's so far away!" Before the lady coud frame a suitable reply, a sunny-faced little miss of five summers vehemently said: "I'll jes' bet He's dot telephones a runnin' to every place."—*Quincy Modern Argo.*

—A young mother was giving to her son, age five years, a touching description of the misery into which the prodigal son had fallen. "Far away from home, and his kind father, obliged to take care of swine, with nothing to eat but husks of corn left by them," etc. "Then, why didn't he eat the pig," was the practical reply.

—A little girl in the infant class of a Sunday-school thoroughly appreciated the difference between being good from choice and from necessity. At the close of the school one day, the teacher remarked, "Beckie, dear, you have been a very good little girl to-day." "Yes, 'm, I couldn't help being good; I got a tiff neck," Beckie replied, with perfect seriousness.

—A scholar in a country school was asked, "How do you parse 'Mary milked the cow?'" The last word was disposed of as follows: "Cow, a noun, feminine gender, third person, and stands for Mary." "Stands for Mary! How do you make that out?" "Because," added the intelligent pupil, "if the cow didn't stand for Mary, how could she milk her?"

—A girl who seems to be undecided which to chose writes to the Chicago *Tribune*, "I adore Augustus' beauty and dash; I admire Harry's wit and keenness; while in the silent chambers of my heart I sit in humiliation and reverence before the shrine of Charley's sublime manhood, his pure and noble principles, any his grand intellect." She would better marry Augustus. The other men seem to have sense.—*Boston Transcript.*

—An Episcopal clergyman tells the following: "Not long since I was speaking to my Sunday-school class of the Ascription, which is said at the close of the sermon, when one of the boys spoke up and said, "Oh yes, I like to hear that, for then I know the sermon is ended.' 'Why,' said I, 'don't you *know* when the sermon is ended—can't you *feel* that it is coming to an end?' 'No,' said the boy; 'but I often feel *it ought to.*'" A good many boys, and a *great many old boys*, not to say some mothers in Israel, are believed to have undergone that experience.—*Harper's Weekly.*

—We are glad to see the WEEKLY constantly improving. The last few weeks it has been better than ever before.—*Morris, Ill.*

—Respecting our monthly edition, Supt. D. Kerr, of Iroquois county, Ill., writes: "The price is so moderate, for the aid rendered, that all earnest teachers, and especially beginners, should avail themselves of the help thus proffered."

"Now in my charge there are fourteen nymphs surpassingly lovely,
"Fairest in person of whom, the beautiful Deïopea,
"I in firm wedlock will join, and make her thy sacred possession,
"That for this favor of thine she may pass all the years in thy service,
"And of a beautiful race make thee also the father and founder."
Aeolus thus in reply: "It is yours, O queen, to determine
"What you may wish to accomplish; to do your command is my duty;
"You have procured me my place, my scepter, and Jupiter's favor;
"You too the privilège grant to recline with the gods at their banquet;
"Over the tempest and storm it is you who have made me the ruler."
Turning he struck with his spear the side of the cavernous mountain,
And, as in martial array, wherever an egress is granted,
Eagerly pour forth the winds, and sweep o'er the earth in a whirlwind;
Now on the sea they have fallen, and stirred to its deepest foundations,
Eastwind and Southwind together, and blasts of the gusty Southwest wind
Lash it all into a fury, and roll to the shore the vast billows;
Now come the cries of the men, and the shrieks of the wind through the rigging;
Then on a sudden collecting, the clouds from the sight of the Trojans
Shut out the sky and the day; o'er the sea broods the darkness of midnight,
Thunder resounds through the sky, the air seems ablaze with the lightning,
Everything seems to portend immediate death to the heroes.
Suddenly ran a cold shudder through all the limbs of Aeneas;
Groaning, and both his hands to the stars in suppliance raising,
Thus he breaks forth in his anguish: "O happy, unspeakably happy,
"They who by Troy's lofty walls, before the fond eyes of their parents,
"Had the good fortune to fall! O thou bravest of all of the Grecians,
"Diomed, why could not I on the Trojan plains, too, have fallen,
"Pouring my life blood out there at the touch of thy prevalent right hand,
"Where, from the stroke of Achilles, lies Hector, where great Sarpedon;
"Where underneath its wave the Simoïs hurries so many
"Helmets and shields along, with the bodies of valorous heroes?"
Even while speaking these words, a howling blast from the northward
Full in his face strikes the sail, to the stars the billows uplifting;
Then, the oars breaking, the prow swinging round gives the side to the billows;
Onward comes rolling and swelling a broken mountain of water;
These on the crest of the wave hang; to these the sea yawning discloses
Land in the midst of the waters; the surge with the sand is commingled;
Three ships the Southwind seizes and hurls on some rocks 'neath the water,
Rocks, which, seen in mid sea in calm, the Italians call Altars,
Just a huge reef at the top of the water; three others the Eastwind
Drives from the deep on the quicksands and shoals, most pitiful objects,
Dashes them 'gainst the bottom, and piles up a sand bank around them;
One, which the Lycians bore, with their leader, the faithful Orontes,
There right before his own eyes, is struck by a heavy sea, breaking
Over the stern, and, thrown from his feet, the helmsman hurled headlong
Into the sea; but the vessel, three times by the swirl of the waters
Spun in the same place around, is swallowed down in the vortex.
Here and there appear in the vast abyss of the waters
Struggling men with their arms, and planks, and the wealth of the Trojans.
Now the stout ship of Ilioneus, now that of valiant Achates,
That in which Abas is carried, and that of the aged Alethes
Yield to the storm, and with loosening joints they receive the unkindly
Flood through the seams of the sides, all gaping in cracks to receive it.
Meanwhile Neptune perceives that the sea is all in commotion,
Stirred to its lowest depths by a howling storm that is raging;
Greatly disturbed by the uproar, he raises his head o'er the waters
And with unruffled face looks out on the turbulent billows;
Scattered about on the sea he sees the fleet of Aeneas,
Sees too the Trojans o'ercome by the waves and the ruin of heaven.
Nor are the schemes and resentment of Juno concealed from her brother.
Calling the Eastwind and Westwind before him, he thus then accosts them:
"Hath so great confidence, then, in the might of your race now possessed you?
"Do you presume, O winds, and that too without my permission,
"Heaven and earth to disturb, and to raise the waves in such masses?
"Whom I—but it is better to calm the tumultuous billows;
"Yet you shall never hereafter escape with so light an atonement.
"Homeward now hasten your flight, and bear to your monarch this message:
"Not to his care the control of the sea and the powerful trident,
"But to my own was allotted, while he has those wild rocky islands,
"Your habitations, Eastwind; in those halls let Aeolus glory,
"Ruling the force of the winds within the closed walls of their prison."
Thus he directs them, and sooner than said allays the wild waters,
Scatters the gathered clouds and restores the sun in the heavens.
Triton at once and Cymothoë striving with earnest endeavor
Push off the ships from the rocks; he himself assists with his trident,
Opens a way through the sands, and smooths the billowy waters,
Over the top of the waves in his light-rolling chariot gliding.
Just as among a great crowd, when a tumult sometimes arises,
Filling the hearts of the rabble with uncontrolled fury and madness,
Firebrands and stones fill the air, their rage supplying the weapons,

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